

I. AMENDMENTS

For the convenience of the Examiner, all pending claims of the present application are shown below in clean form whether or not an amendment has been made. Please refer to the attached sheet showing a mark-up version of the amendments to the claims.

1. (Twice Amended) A system for directing a selected light beam to at least one light beam receptor, said system comprising:

an array of stationary optical fibers, each one of said stationary optical fibers constructed and arranged to conduct one of a plurality of light beams including the selected light beam;

81 an optical switch fabricated on a substrate, the switch having an array of movable reflective surfaces, and having a single thermal actuator associated with each reflective surface, each thermal actuator comprising a cantilevered arm having a fixed end attached to the substrate and a free end to which the reflective surface is attached, the arm being made from a material having a thermal expansion property, the arm having a top surface and a bottom surface with a layer of material having a different thermal expansion property on a portion of at least one of these surfaces, and the cantilevered arm having an air gap between its top and bottom surfaces;

a lens at the end of each optical fiber, operable to direct the light beams to the switch or to collect light from the switch;

wherein each reflective surface is attached such that it is substantially perpendicular to the substrate; and

wherein the optical fibers are arranged around the perimeter of the substrate, such that each reflective surface

B1
concl. is moveable into the path of one or more of the optical
fibers.

[Claims 2/and✓3 were previously cancelled without prejudice
or disclaimer.

[Please cancel Claims 4 ✓ without prejudice or disclaimer.

B2 2. (Previously Amended) The system of Claim 1, wherein
each cantilevered arm is made from a material selected from
the group of single crystal silicon, polycrystalline silicon,
silicon dioxide, or silicon nitride.

3. (Previously Amended) The system of Claim 1, wherein
the arm has a layer on each of the top and bottom surfaces and
these layers have the same thermal expansion property.

4. (Previously Amended) The system of Claim 1, wherein
the arm has a layer on each of the top and bottom surfaces and
these layers have different thermal expansion properties.

5. (Previously Amended) The system of Claim 1, wherein
the layers are made from a metallic material.

6. (Previously Amended) The system of Claim 1, wherein
each cantilevered arm is spaced from the substrate by means of
an extension of the arm extending substantially vertically
from the substrate.

[Claims 10 -16 were previously cancelled without prejudice
or disclaimer.

9' 411. (Previously Amended) A thermally operated optical switch for use in directing a beam of light to at least one receptor, said thermally operated optical switch comprising:

a substrate;

an array of reflective surfaces; and

B3 a plurality of cantilever thermal actuators, each cantilever actuator having a fixed end affixed to the substrate and having a free end to which an associated reflective surface is attached such that each reflective surface has a single associated actuator, and wherein each actuator has a cantilevered arm made from a material having first thermal expansion property, each arm having an upper surface and a lower surface and having a layer of material having a second thermal expansion property on a portion of both of these surfaces;

wherein each reflective surface is attached such that it is substantially perpendicular to the substrate.

[Claims 18 and 19 were previously canceled without prejudice or disclaimer.

B4 20. (Previously Amended) The thermally operated optical switch of Claim 17 wherein cantilevered arm has an air gap between its top and bottom surfaces.

21. (Previously Amended) The thermally operated optical switch of Claim 17 wherein each cantilevered arm is made from a material selected from the group of single crystal silicon, polycrystalline silicon dioxide, or silicon nitride.

22. (Previously Amended) The thermally operated optical switch of Claim 17 wherein the arm has a layer on each of the top and bottom surfaces and the layers have the same thermal expansion property.

23. (Previously Amended) The thermally operated optical switch of Claim 17, wherein the arm has a layer on each of the top and bottom surfaces and the layers have different thermal expansion properties.

24. (Amended) The thermally operated optical switch of Claim 17 wherein the layers are made from a metallic material.

Claim 25-30 were previously cancelled without prejudice or disclaimer.

31. (Previously Added) The system of Claim 1, wherein the application of electrical or heat energy to one of said thermal actuators will move said reflective surface into the path of the selected light beam so that the selected light beam will be directed to the light beam receptor.

32. (Previously Added) The system of Claim 1, wherein the reflective surface is rigidly attached to the arm.

33. (Previously Added) The system of Claim 17, wherein the application of electrical or heat energy to one of said thermal actuators will move said reflective surface into the path of the selected light beam so that the selected light beam will be directed to the light beam receptor.

85
concl.

34. (Previously Added) The system of Claim 17, wherein the reflective surface is rigidly attached to the arm.

17/35. (Amended) A thermally operated optical switch for use in directing a beam of light to at least one receptor, said thermally operated optical switch comprising:

a substrate;

an array of reflective surfaces; and

a plurality of cantilever actuators, each actuator having a pair of arms, each arm of the pair having a fixed end affixed to the substrate, and the arms of each pair having a common free end to which an associated reflective surface is rigidly attached, such that each reflective surface has a single associated actuator;

wherein each reflective surface is attached such that it is parallel to the substrate.

18/36. (Previously Added) The switch of Claim 17, wherein the arms of each pair have different widths.

19/37. (Previously Added) The switch of Claim 17, wherein the arms of each pair have different lengths, such that one arm of each pair is located under the other arm of that pair.

Please cancel Claims 38 without prejudice or disclaimer.

Please cancel Claims 39 without prejudice or disclaimer.